FERNS OF THE SECOND ARCHBOLD EXPEDITION TO NEW GUINEA*

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THE ferns of the First Archbold Expedition to New Guinea were discussed by Dr. Carl Christensen, in Brittonia **2:** 265–317. 1937. These were from the high mountains of British New Guinea, and, from the 343 numbers collected, Christensen described 40 new species.

The Third Archbold Expedition collected in Netherlands New Guinea, mostly at high altitudes. From an incomparable wealth of more than 900 field numbers, I described 109 species as new. Publication of these began in the Philippine Journal of Science but was interrupted by war. To record and guard the names, I published brief diagnoses of 87 species, still awaiting publication and illustration in Manila, in the University of California Publications in Botany (**18:** 217–226. 1942).

The Second Archbold Expedition collected at low altitudes, although far from the coast, in the plains and foothills far up the Fly River. Such country is poor in ferns as compared with the mountains, and the ferns which do occur in the lowlands are mostly species of wide range. It is therefore not surprising that the 171 collection numbers of this expedition include no more than five definitely new species. Descriptions of these and comment on a few other species follow. All the numbers cited are represented in the Gray Herbarium, and the types of new species, unless otherwise indicated, are deposited in the author's herbarium.

Cephalomanes Ledermanni (Brause) comb. nov.

Trichomanes Ledermanni Brause in Bot. Jahrb. **56:** 35. 1920.

BRITISH NEW GUINEA: Fly River, 528-mile Camp, alt. 80 m., in ridge forests, *Brass 6663*.

Related to *C. atrovirens* Presl (*Trichomanes rhomboideum* J. Sm.), but distinguished, as correctly indicated by Brause, by smaller size, lax venation, and small, obconic involucres. The sori of our specimen are more abundant than on Brause's type, and therefore they occupy a larger part of the frond and occupy the ends as well as the acroscopic sides of the pinnae; some occur even below the ends, on the basiscopic sides.

Trichomanes maluense Brause is distinguished in part by just such a more ample production of sori. Whether or not its rather feeble other differences are more significant, I do not venture to guess.

Cyclosorus gregarius sp. nov.

C. rhizomate adscendente, sicco 6 mm. crasso, apice paleis fuscis lineari-lanceolatis glabris debilibus 3–4 mm. longis vestito; stipitibus approximatis, usque ad pinnas reductas 25 cm., ad pinnas normales 70 cm. altis,

*Botanical Results of the Richard Archbold Expeditions.

rhachibusque glabris; fronde, pinnis basalibus remotis abrupte reductis exclusis, fere 60 cm. alta et 25 cm. lata, pinnata, pinna apicali caeteris conforme sed minore; pinnis normalibus remotis, alternantibus, sessilibus, inferioribus fere 15 cm. longis et 15 mm. latis, gradatim acuminatis, basi late cuneatis, leviter crenato-lobatis lobis crenulatis, herbaceis, costa superne setulis inconspicuis inflexis praedita, aliter glabrescentibus, venulis acroscopicis 3, basicopicis 2 anastomosantibus; soris medialibus vel inframedialibus, indusio parce et breviter ciliato, caduco.

BRITISH NEW GUINEA: Fly River, 528-mile Camp, alt. 80 m., *Brass 6759* (TYPE), "gregarious in clumps over 1 m. high, on mud in shaded creek bottoms."

Indusia can be detected only on the youngest sori.

Lindsaea subtripinnata sp. nov.

L. gregis *L. heterophyllae* Dry. et *L. orbiculatae* (Lam.) Mett., fronde basi tripinnata, apice attenuata pinnata, pinnis medialibus pinnatis lanceolatis, pinnulis omnibus parvis, cuneatis plerisque obovato-cuneiformibus apice rotundatis, venis liberis, soro continuo vel rarius interrupto, indusio cum margine contermino.

BRITISH NEW GUINEA: Tarara, Wassi Kussa River, Western Division, *Brass 8491* (TYPE), common on banks of gullies in rain-forest.

The stipe is about 30 cm. and the lamina about 25 cm. long.

Great as is the variety of fronds referred to *L. orbiculata* and *L. heterophylla, L. subtripinnata* seems sufficiently distinguished by its small pinnules and the absence of larger undivided pinnae. The free venation is correlated with the fine dissection of the frond. I have no New Guinean specimen of either *L. heterophylla* or *L. orbiculata,* but the former has been reported from the island. The group runs riot in New Caledonia.

Oleandra subdimorpha sp. nov.

Epiphytica, caudice gracili, paleis supra basim peltatis, nigris marginem lacerum versus pallescentibus ad ramos laterales breves imbricatis ad caudices erectos elongatos sparsis; frondibus ad ramos approximatis, ad caudices remotis, pedicellis 4 mm. longis, stipitibus 12–18 mm. longis, frondium fertilium paullo longioribus; fronde sterili ca. 18 cm. longa et 4 cm. lata, basi subinaequaliter rotundata, apice abrupte in caudam angustissimam 3 cm. longam contracta, coriacea, glabra, venis arcte approximatis; fronde fertili longiore, 1 cm. lata, venis remotioribus, soris medialibus, indusiis late reniformibus, oblique insertis, atrocastaneis, coriaceis.

BRITISH NEW GUINEA: Palmer River, 2 miles below junction with Black River, alt. 100 m., *Brass 6886* (TYPE, in Gray Herb.), "stiff climbing epiphyte."

A relative of *O. Werneri* Ros., but less dimorphic, the base of the sterile frond broader, the sori farther from the margin.

Humata papuana sp. nov.

H. gregis *H. repentis,* rhizomate gracili late repente, paleis atrofuscis lanceolatis 3 mm. longis tum demum deciduis vestito, deinde glauco; frondibus remotis, dimorphis, sterilium stipitibus plerumque perbrevibus rarius usque ad 5.5 cm. longis, sparse et decidue squamiferis, laminis deltoideis usque ad 5 cm. longis, pinnatis pinnis infimis tantum pinnatifidis sessilibus apice rotundatis coriaceis glabris, segmentis sequentibus lobatis, superiori-

bus integris; frondium fertilium stipitibus 9 cm. altis, gracilibus, laminis 7 cm. longis late deltoideis basi tripinnatifidis, soris et axialibus et ad bases dentium brevium inconspicuorum, indusiis quam longis multo latioribus, etenim marginem superantibus.

BRITISH NEW GUINEA: Palmer River, 2 miles below junction with Black River, alt. 100 m., *Brass 6987* (TYPE), "matted on branches of tall canopy trees." *Brass 6593,* Fly River, 528-mile Camp, alt. 80 m., "creeping in moss mats high on canopy trees, common," is a depauperate form of the same species, the sterile fronds at most 2 cm. long, on stipes 7 mm. long.

Related to *H. kinabaluensis,* which has the teeth subtending the sori more completely suppressed, and to *H. pusilloides,* which has them much more conspicuous. *Humata alpina* var. *edentula* Ros. is like *H. kinabaluensis* in suppression of the teeth; judging by a single specimen, the sterile frond is more contracted, but with longer pinnae.

? Polypodium neglectum Blume, Enum. Pl. Jav. 121. 1828, Fl. Jav. Fil. 133. *pl. 54, f. 1.* 1828.

BRITISH NEW GUINEA: Palmer River, alt. 100 m., common on branches of tall trees, *Brass 6881.*

The identification is by description and doubtful. The rhizome is "repens, filiforme, tenue, ramosum, paleis lineari-lanceolatis acutissimis . . . imbricatis albo-scariosis . . . vestitum," quoting, with omissions, Presl, Epim. 124; Presl's description is likely to have been based on a "Manila" plant of Meyen. Van Alderwerelt's description, Malayan Ferns 435, fits Brass' plant in most respects. Backer & Posthumus, Varenflora voor Java 195, reduce *P. neglectum* to *P. stenophyllum* Blume, which seems most unlikely to be correct. Brass' plant is certainly not *P. stenophyllum.*

P. redimiens Brause is also known to me from description only. This description fits Brass' plant as to the fronds, but the rhizome is said to be "pallidum," "auffallend bleich," while that of Brass' plant is partly fuscous, mostly black; and the paleae are said to be "clathratis, deltoideis margine spinuloso-dentato," all of which is inappropriate. However, I suspect its identity with our plant. There is near affinity to *Polypodium pyrolaefolium* Bergsmann, the type of *Crypsinus;* and, still nearer, to *P. Whitfordii* Copel., of Luzon.

Selliguea Archboldii sp. nov.

S. gregis *S. Feei,* rhizomate late repente, paleis nigris, basi peltatis fusco-marginatis, deinde in setas squarrosas abrupte contractis; frondibus remotis, sterilibus ca. 15 cm. longis et 35 mm. latis, abrupte caudatis, coriaceis, basi cuneatis, stipitibus 6 cm. longis, venis haud occultis; frondibus fertilibus 10–12 cm. longis et 12–15 mm. latis, basi attenuatis; soris superficialibus, e costa ad marginem protensis.

BRITISH NEW GUINEA: Fly River, 528-mile Camp, alt. 80 m., *Brass 6836* (TYPE, in Gray Herb.), "creeping epiphyte, common on branches of high canopy trees; fronds very stiff."

Most like *S. feeioides* Copel., of Fiji, Samoa, and Tahiti, but smaller, with smaller, darker and narrower paleae.

Cyclophorus dispar Christ in Nova Guinea **8:** 155. 1909; v. A. v. R. in Bull. Jard. Bot. Buitenz. II. **1:** 4. *pl. 2, f. 2, 3.* 1911.

British New Guinea: Palmer River, alt. 100 m., *Brass 6872, 6879, 7253, 7371,* epiphytic, mostly on mossy branches of canopy trees; very uniform.

The fronds are short-stipitate rather than subsessile, but the conformity with Christ's description is reasonably close. I find nothing like the lid over the soral cavity, nor the great tufts of hairs described and figured by van Alderwerelt. The indument of the nether surface of the sterile frond is persistent. The sori are in an irregular row, or in two or three hardly distinguishable rows. On fully fruiting fronds, the sori come into contact as they expand.

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